

## FLEXIBLE PACKAGING

Sensitive devices require protection from electrostatic fields and electrostatic discharges whenever they are outside an ESD Protected Area. Such protection is achieved by enveloping the device in a material with a conductive layer. It is generally felt that to provide an adequate shield the conductive layer must have a surface resistance of  $1 \times 10^3$  ohm or less. Often, an ESD packaging material will also provide mechanical protection or protection against contamination by dust or humidity.

EN 100015-1 defines three levels of packaging: Intimate, Proximity and Secondary.

The following definitions are also included in the draft:

**Antistatic:** Packaging which minimizes charge generation by separation or rubbing with other materials.

**Electrostatic discharge shielding:** A barrier or enclosure that limits the passage of current and attenuates the energy resulting from an electrostatic discharge of 1000V to  $\leq 50$  nanojoules.

**Electrostatic conductive:** Packaging with a surface resistance  $\geq 1 \times 10^3$  ohm and  $< 1 \times 10^6$  ohm.

**Electrostatic dissipative:** Packaging with a surface resistance  $\geq 1 \times 10^6$  ohm and  $< 1 \times 10^{12}$  ohm.

**Insulative:** Packaging with a surface resistance  $\geq 1 \times 10^{12}$  ohm.

The draft of the revision of EN 100 015 includes the following table of requirements:

INSIDE EPA		OUTSIDE EPA		
	Intimate	Proximity	Intimate	Proximity
ESDS	Either astatic and electrostatic conductive or astatic and electrostatic dissipative (for powered ESDS only astatic and electrostatic dissipative above $10^9$ shall be used)	Astatic and electrostatic shielding or Astatic and electrostatic conductive or dissipative	As for inside EPA	Electrostatic shielding
Non ESDS	Dissipative or astatic		No requirements	
<b>NOTE:</b> Where surface resistance $> 10^{10}$ ohms is used, the material shall be procured with a $T_{1000} < 2\text{sec}$				

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### Note to film thickness:

1 micron =  $10^{-6}\text{m} = 0.001\text{mm}$

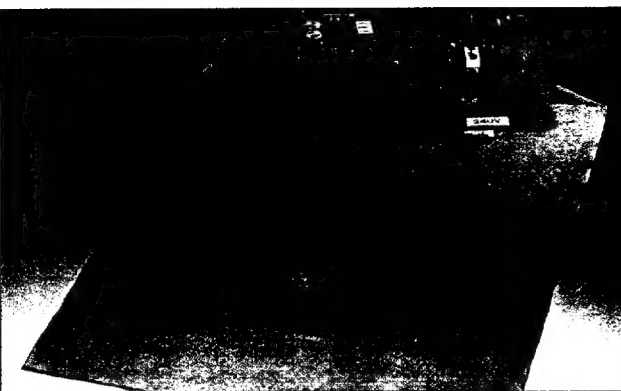
100 gauge = 0.025mm therefore 300 gauge = 0.075mm or 75micron

100 gauge 1 thou = 1 mil (USA)

**Note to bag dimension variations:** Thickness variations may reach  $\pm 6\%$  e.g. a 75micron film will vary between 70 and 80micron though in a large sample the average thickness will be between 73 and 77micron. Bag width and length variations  $+ 20\text{mm} - 0\text{mm}$  to the normal metric dimension are tolerated. Tubing length variations may reach  $\pm 3\%$ .

**Note to bag sizes:** First dimension is bag width, second is bag length.

## ANTISTATIC PINK TUBING AND BAGS



- Suitable for use in EPA to hold non-ESD sensitive items
- Made of polyethylene, 0.075mm thick
- Amine free, humidity dependent additive
- Tough, puncture resistant
- $R_s < 10^{11}$ ,  $T_{1000} < 2\text{sec}$  at 50% rH
- Bags are printed in black with ESD logo and text to EN 100 015, in bundles of 100
- Available as tubing unprinted on rolls up to 500m long and 825mm wide

